# **The SWAP Project**

## **Helping to build Secure Web Applications**

#### From the news:

- 11 widely deployed shopping cart applications suffer from Form Modification ("price-changing") vulnerabilities – Internet Security Systems (ISS), February 2000.
- 30-40% of e-commerce sites are vulnerable to attack – ZD-Net, March 2001.
- By 2004 30% of all buffer overflow attacks will be carried over HTTP tunnelling; and
- by 2006 more than 50% of successful Internet attacks will exploit application data handling vulnerabilities vs. operating system and application misconfigurations – Gartner, March 2002.

### Some reasons for failure

- Developers forced to use low-level languages and tools with few useful abstractions
- Projects often consist of multiple interacting components written in different languages (e.g. PHP, VBScript, Javascript, SQL) by different people
- Distributed systems are much harder than nondistributed ones
- Tricky to get a clear view of the whole system; often there is no simple way to abstract out security-related code for easier analysis.

# **Our Application Framework** Original Policy Security-related aspects abstracted out of main application source code into a Description Source separate, easier to check specification. Code analysis and transformation used Code Analyser Policy Compiler in conjunction with dynamic request processing to ensure specified policy is Transformed Component Clients Binary only Internet DB Web Application Application-level Firewall

